

REMARKS/ARGUMENTS

Claims 1-26 stand in the present application. Reconsideration and favorable action is respectfully requested in view of the following remarks.

In the Office Action, the Examiner has rejected claims 1-12 and 14-25 under 35 U.S.C. § 103(a) as being unpatentable over Chennakeshu in view of Lee. Applicants respectfully traverse the Examiner's § 103 rejection of the claims.

In the Office Action at pages 2-3, the Examiner admits that Chennakeshu does not disclose limitations (d) and (e) of claim 1 nor the corresponding claim limitations in claim 14. The Examiner in rejecting all of the present claims is relying upon Lee to provide this deficiency.

Lee discloses an iterative decoding algorithm for decoding user date encoded with concatenated, convolutional codes. Soft output values for the encoded user data are generated during a first iteration by a soft-output Viterbi algorithm using a Viterbi detector, along with a set of reliability values which are used to decode the soft output values. During subsequent iterations, the reliability values are updated using a different algorithm rather than a Viterbi decoder, to form a new set of soft-output values. The new soft output values are then fed back into the algorithm for use in later iterations.

Iteratively updating reliability values rather than "re-detecting" user data using a full Viterbi detector is said to provide for reduced circuit area and complexity in an alternative decoder. See, Lee at column 3, lines 63-67. Applicants respectfully disagree with the Examiner that Lee (column 2, line 50 through column 4, line 17) discloses refining probabilities by either partially or fully decoding a probability in an iterative decoding algorithm as required by the present claims. The cited passage of

Lee is concerned with detection and demodulation of a block of symbols from an output channel, and not the decoding limitation of the present claims. Moreover the reference to a “full iteration” at column 3, lines 10-11 signifies that complete iterative detection occurs before a block of symbols is subjected to an iteration of decoding.

Full demodulation refers to complete detection of a block of symbols from the output channel samples before subjecting the block of symbols to an iteration of decoding. This is commonly termed a “full-iteration” decoding scheme because in effect, iterative detection also takes place in the receiver.

See Lee at column 3, lines 7-12.

In contrast, according to the claimed invention, it is the number of iterations of a decoding algorithm that are varied so as to partially or fully decode a probability. This variable-complexity iterative decoding algorithm, in turn, operates inside another loop (i.e., it is an iterative process, occurring inside an iterative process) that is itself separating out the signals of multiple users on a TDMA channel by iteratively canceling interference due to the overlapping signals of other users.

The use of a variable-complexity iterative decoding algorithm within an iterative multi-user signal processing system provides the key inventive advantage that the system is far less likely to “lock onto” a false signal for a particular user than would occur if all probabilities were fully decoded during each iteration. Applicants submit that even a combination of the cited references would not arrive at Applicants’ invention, as defined in the claims, and that there is no reason why those skilled in the art would have contemplated such an advantage from a reading of Chennakeshu and Lee at the time of Applicants’ invention.

Applicants also respectfully disagree that Lee discloses the subject matter of claims 4-9 of the present application. These features are concerned with particular “convergence criteria” through which the “partial decoding” step of claim 1 is implemented. In contrast, the passages of Lee relied on by the Examiner discuss the process for updating the “reliability values,” which as noted above are used as a precursor to decoding. Lee contains no disclosure of any “convergence criteria” that are (or indeed can be) used to implement a variable-complexity decoding algorithm that could be combined with the teachings of Chennakeshu to render claims 4-9 as obvious. Accordingly, claims 4-9 are believed to further patentably define over the cited art.

Therefore, in view of the above remarks, it is respectfully requested that the application be reconsidered and that all of claims 1-26, standing in the application, be allowed and that the case be passed to issue. If there are any other issues remaining which the Examiner believes could be resolved through either a supplemental response or an Examiner's amendment, the Examiner is respectfully requested to contact the undersigned at the local telephone exchange indicated below.

Respectfully submitted,

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